

CLAIMS

1. An EKG structure comprising geosynthetic material associated with at least one conducting element wherein the structure comprises at least one core element substantially enclosed by at least one sheath, one or both comprising the geosynthetic material.
2. An EKG structure as claimed in Claim 1 wherein the geosynthetic serves as at least one reinforcement and/or drainage/in plane flow and/or filtration and/or separation and/or membrane element.
3. An EKG structure as claimed in any of Claims 1 and 2 wherein a sheath is a substantially closed or enclosing structure suited to contain or retain within it one or more core elements.
4. An EKG structure as claimed in any of Claims 1 to 3 wherein the at least one core element is a continuous, ideally solid, monolithic or divided element, including any channels, spacers, voids, reservoirs.
5. An EKG structure as claimed in any of Claims 1 to 4 wherein the core element comprises substrate or a treating material therefor whereby the EKG is suited to be (partially) immersed within a substrate to be treated, and/or it comprises or (partially encloses) a substrate to be treated or other material for treating the substrate.
6. An EKG structure as claimed in any of Claims 1 to 5 wherein substrate is soil, loam, earth, earth, sod, ground material including mixed ground material and waste material or a mix of ground material and any other material, sewerage, sludge, or other substance or mixture of substances to be treated.

7. An EKG structure as claimed in any of Claims 1 to 6 wherein the at least one core element or combination of elements is in direct contact with the sheath over substantially all of its outer surface or their combined outer surface.
- 5 8. An EKG structure as claimed in any of Claims 1 to 7 in the form of a large surface area, essentially planar but optionally flexible filled structure hereinafter duvet having two major faces and optionally at least one minor face.
- 10 9. An EKG structure as claimed in any of Claims 1 to 7 in the form of a continuous, elongate tube, tape or rope, or an array or grid thereof in the form of interwoven EKG structures making up a matrix or cloth.
- 15 10. An EKG structure as claimed in any of Claims 1 to 9 wherein the conducting element is pure or composite metallic such as metals or metal powders (steel, copper), dispersed in suitable solid carriers, or is conducting non-metallic, such as carbon, a conducting polymer or composite thereof.
- 20 11. An EKG structure as claimed in any of Claims 1 to 10 wherein the conducting element is in the form of a filament, fibre, strand, wire, layer of shaped solid or hollow form, or conducting material is dispersed throughout the sheath and/or core.
- 25 12. An EKG structure as claimed in any of Claims 1 to 11 wherein the conducting elements are randomly, regularly or irregularly spaced, or are in the form of one or more lines of spaced elongate (parallel) members.
13. An EKG structure as claimed in any of Claims 1 to 12 wherein material

forming the sheath is conductive, porous or discontinuous to allow current to pass through it to a conducting element

14. An EKG structure as claimed in any of Claims 1 to 13 wherein non-
5 conducting materials comprises polymeric material, preferably comprises metal deactivator and anti-oxidant.

15. Use of the EKG structure as hereinbefore defined in any of Claims 1 to
14 as an electrode.

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16. Method of treating a substrate by improving its consolidation and/or
reinforcement and/or removing or electro absorbing contaminants from it,
comprising positioning a plurality of electrodes, at least one of which is an
EKG structure as hereinbefore defined in any of Claims 1 to 15 in situ and
15 applying an electric field between the electrodes.

17. Method of treating a substrate by adding a nutrient or other biological
or non-biological material, changing the pH or heating comprising providing a
source of the material, positioning a plurality of electrodes, at least one of
20 which is an EKG structure as hereinbefore defined in any of Claims 1 to 16 in
situ and applying an electric field between the electrodes.

18. A treated substrate obtained with use of an EKG or method as defined
in any of Claims 1 to 17.

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19. An EKG substantially as hereinbefore described or illustrated in the
Figures 1 to 17 or 19.